Six surface water samples and one field duplicate sample were collected by URS on February 20, 2002 through March 4, 2002 at the Bradford Island site in Cascade Locks, Oregon as part of the Bradford Island In Water Removal Work. The analytical results for the water samples were subjected to a quality assurance/quality control (QA/QC) review. This QA/QC review includes evaluation of representativeness (degree to which the sample represents the environmental condition), accuracy (spike and/or standard recoveries), analytical precision (duplicate relative percent difference), comparability (use of standard methods) and completeness (percent of usable data). This review addresses only those problems that affect data usability.

The data quality review process followed the procedures outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999) and *Inorganic Data Review* (USEPA, February 1994), where applicable. No raw data were reviewed and no results were recalculated.

Samples were collected according to the Bradford Island Removal Work Sampling and Analysis Plan (SAP) (URS, 2001). Surface water samples were collected in four one-liter glass amber bottles and submitted to Severn Trent Laboratories – Seattle, Inc., (STL) (formerly Sound Analytical Resources, Inc.) located in Tacoma, Washington. The laboratory analyzed the samples for total organic carbon (TOC) via method 9060 before the sample was filtered. Next, the laboratory filtered the samples through a 0.7-micron glass filter. The water that passed through the filter was analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082 (dissolved PCBs) and organic carbon by EPA Method 9060 [dissolved organic carbon (DOC)]. The filter and the particulates captured by the filter were extracted and analyzed for PCBs by EPA Method 8082 (particulate PCBs).

Table C-1 summarizes qualifiers added to the data. Final sample results and qualifiers are presented in Table C-2.

REPRESENTATIVENESS

Chain-of-Custody and Holding Times

The chain-of-custody (COC) forms were signed upon release and receipt. The laboratory cooler receipt form indicates that custody seals were not attached to coolers containing samples 020223IW02WC, 020226IW03WC, 020227IW04WC, 020228IW05WC and 020228IW06WC upon arrival at the laboratory. Sample results were not qualified due to this nonconformance.

All coolers were submitted at temperatures within 4°C $\pm$ 2°C. PCB analyses were conducted within the technical and contracted holding time. The total and dissolved organic carbon analyses were conducted outside the technical holding time of four hours for unpreserved samples. All samples and were qualified as estimated (J).

Review of Narrative

The laboratory noted that the cap for the separatory funnel used to extract sample 020228IW05WC for dissolved PCB analysis leaked, resulting in a small loss of sample and solvent. The amount lost was not quantified. The sample surrogate recoveries were within criteria; therefore, data were not qualified.

The DOC results may not be representative of the conditions in the water column. The DOC results are higher than the TOC results indicating that the DOC results are likely artificially elevated. Although a filter blank was not prepared, the laboratory noted that the DOC may have picked up carbon from the filtering process; either from the filter or handling of the filter.

Review of Blanks

Method blanks were used to check for laboratory contamination and instrument bias. The laboratory analyzed at least one method blank for each analysis and for each batch, per method requirements. Target compounds were not detected in the method blanks.

The samples were collected with dedicated equipment; therefore an equipment blank was not collected.

ACCURACY

Instrument Calibration

The laboratory performed initial multipoint calibrations for all target and surrogate compounds as required by EPA Method 8082. Initial calibrations and continuing calibrations were analyzed at the proper frequency and at the appropriate concentrations. Percent relative standard deviation values were less than 20% and percent differences were less than 25%.

Surrogate Recovery Review

Each sample analyzed for PCBs was spiked with surrogates (system monitoring compounds). Surrogate recoveries are a measure of accuracy for the overall analysis of each individual sample. Surrogate recoveries were within the acceptance criteria of 50 to 150% with one exception:

- Surrogates decachlorobiphenyl and tetrachloro-m-xylene for sample 020220IW01WC exhibited recovery less than the acceptance criteria indicating a potential low bias. The sample results were non-detect and were qualified as estimated (UJ).

Laboratory Control Samples and Matrix Spike/Matrix Spike Duplicate Review

Laboratory control samples (LCS) are used to monitor the laboratory's day-to-day performance of routine analytical methods, independent of matrix effects and to assess accuracy for the target

compounds. LCS spike recoveries were within the acceptance criteria of 50–130% for PCBs and 90-115% for DOC and TOC.

Matrix spike/matrix spike duplicate (MS/MSD) samples are analyzed to assess the ability of the laboratory to recover the target compounds from the sample matrix. MS/MSD spike recoveries were within the acceptance criteria of 50–150% for PCBs and 80-120% for DOC and TOC. The relative percent difference was less than the acceptance criteria of 50% for both analyses.

PRECISION

Second Column Confirmation

Second column confirmation was performed for all PCB and pesticide results. All PCB sample analyses exhibited an RPD $\leq$ 40% between the first and second column.

Duplicate Review

One field duplicate (020228IW05WC and 020228IW06WC) was collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. The field duplicate frequency meets the project requirement of ten percent. The results and relative percent differences for detected analytes are presented in the table below. The RPD is not calculated when the sample results are less than five times the reporting limits, as indicated on the table with a NC (not calculated) in the RPD column.

ANALYTE	UNITS	020228IW05WC PRIMARY RESULT	020228IW06WC DUPLICATE RESULT	RELATIVE PERCENT DIFFERENCE
011016BIL11SS/011016BIL12SS				
PCB Aroclor 1254 (particulate)	µg/L	0.0186	0.00487 U	NC
PCB Aroclor 1260 (particulate)	µg/L	0.00491 U	0.0347	NC
DOC	mg/L	1.89	1.83	3
TOC	mg/L	1.7	2.4	34

NC – Not Calculated

The laboratory reported detections of two different PCB Aroclors (Aroclors 1254 and 1260) in the primary and field duplicate samples. PCBs detected in the water column may be weathered, and therefore exhibit less recognizable patterns than the standard, which may account for the Aroclor identification disagreement. The primary and field duplicate Aroclor results were qualified as estimated (J).

COMPARABILITY

Reporting Limits

The sensitivity (i.e., reporting limits) of the analytical methods is driven by the project specific DQOs. The reporting limits for all samples were below the project specific benchmark value for PCBs; the ambient water quality criteria of 0.014 µg/L.

COMPLETENESS

The laboratory reported all requested analyses and the deliverable data reports were adequate for review. Completeness is defined as the percentage of usable data out of the total amount of data generated. The project completeness goal of 100 percent was attained.

TABLE C-1
Summary Of Data Qualification

QUALIFIED SAMPLE ID	QUALIFIED ANALYTE(S)	QUALIFIER	ANALYTICAL DEVIATIONS
020220IW01WC	All PCB Aroclors - Dissolved	UJ	Surrogate recovery < 50%
	TOC and DOC	J	Outside of technical hold time
020223IW02WC	TOC and DOC	J	Outside of technical hold time
020226IW03WC	TOC and DOC	J	Outside of technical hold time
020227IW04WC	TOC and DOC	J	Outside of technical hold time
020228IW05WC	PCB Aroclor 1254 - Particulate	J	Laboratory reported Aroclor 1260 in the field duplicate
	TOC and DOC	J	Outside of technical hold time
020228IW06WC (Field duplicate)	PCB Aroclor 1260 - Particulate	J	Laboratory reported Aroclor 1254 in the primary sample
	TOC and DOC	J	Outside of technical hold time
020304IW07WC	TOC and DOC	J	Outside of technical hold time

Notes:

ID - identification
J - The associated numerical value is an estimate.
UJ - The analyte was not detected above the reported, estimated sample quantitation limit.